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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

PUBLISHED MONTHLY for the PHYSICIAN in the GENERAL PRACTICE of MEDICINE

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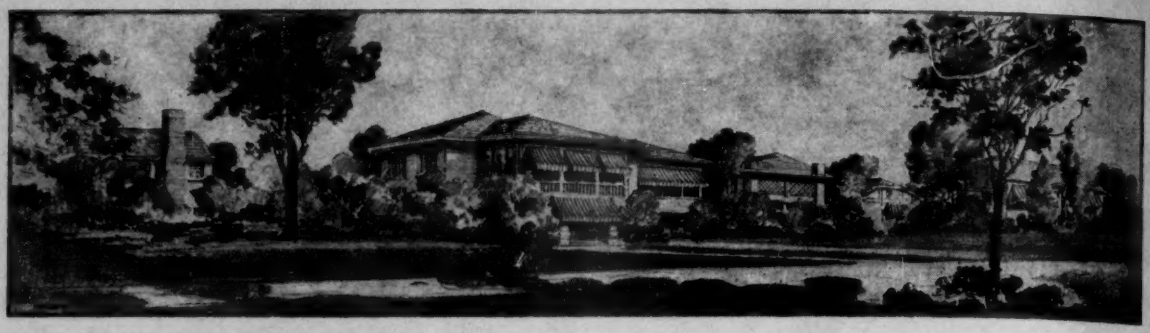

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DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

EDITORIAL COMMENT

Psychiatric Out-Patient Clinics in General Hospitals

One of the most promising trends in modern medicine is the appreciation of the close relationship and interdependence that exists between personality factors and somatic functions. Somatic disease, no matter how restricted it may appear to be to some particular organ, will affect the personality and find its reflection in changes in behavior and, similarly, emotional frustrations or upheavals can be shown to have their effects in disturbances in the functions or even structure of the body. A proper understanding of disease, therefore, and a successful performance of the art and science of healing can best be achieved on the basis of an approximation of the two disciplines.

The psychiatrist should learn to evaluate properly the meaning and importance of somatic dysfunctions in the production of personality aberrations. The physician who deals with somatic diseases should take cognizance of the fact that these conditions are not limited to any particular organ, but involve the whole individual and that it is the latter that is to be treated and not any special part of him. The primary purpose, therefore, of a psychiatric clinic functioning within the walls of a general hospital consists in the approximation of these two methods of approach in the interests of the sick person. Such a clinic, furthermore, will serve another purpose. It will afford an opportunity for the psychiatrist to come in contact with the early formative stages of mental diseases.

In the psychiatric hospitals one is most likely to deal in the majority of cases with full-blown or even chronic diseases, difficult to understand and treat, frequently impossible to cure. In the early stages, the manifestations of these diseases may take the form of physical discomforts or minor personality deviations which are much more likely to lead the patient to seek help in a general hospital than at a psychiatric clinic. It is in these stages that such disturbances are most accessible to treatment, both in terms of eradicating the disease and of preventing its progress. Finally, a third and very important function of such a clinic consists in the invaluable service it can render as a teaching unit. Here the medical student, the interne and the younger members of the various fields in the medical profession will have an opportunity to learn how to investigate psychiatric problems, recognize them in their early stages, treat them at a time when treatment is probably most effective and readjust the patients to the task of living in their particular social settings.

The Evaluation of Psychoneurotic Symptoms in General Medical Practice

B. C. SCHIELE, M.D., and R. L. MELLER, M.D.
Minneapolis, Minnesota

Dr. Schiele received his degree as Doctor of Medicine from the University of Colorado in 1931. After completing a Commonwealth Fund Fellowship at the Colorado Psychopathic Hospital, he served three years on the Psychiatric Staff of the New York Hospital. Since 1937, he has been an Assistant Professor of Nervous and Mental Diseases at the University of Minnesota.

Dr. Meller graduated from the University of Minnesota Medical School in 1937. He is now a graduate in Neuropsychiatry and an Assistant in the Division of Nervous and Mental Diseases at the University of Minnesota.

Psychoneuroses and other personality disorders commonly present difficult diagnostic and therapeutic problems to the clinician. Every human being has a more or less distinct personality which is capable of reacting in a variety of ways. Hence, it is not surprising that the question as to whether part or all of a given patient's symptomatology may be functional must be frequently considered. Furthermore, errors easily arise in such problems, since the diagnosis of functional disease is based on less tangible grounds than is usually the case in organic disturbances.

It is the purpose of this paper to discuss a few of the technical and theoretical aspects of functional disorders as they pertain to the general practice of medicine and surgery.

In order to avoid misunderstandings over the use of terms, it is necessary to give a few commonly accepted definitions:

Organic disease hardly needs defining. It is generally conceded to be any disease whose symptoms are chiefly the result of some demonstrable structural or chemical alteration.

A *functional disorder* is one in which structural change is not demonstrable.

A *psychogenic disorder* is a functional disturbance due chiefly to psychological causes. While psychogenic disorders are functional ones, the reverse is not necessarily true.

The term *psychoneurosis* may be roughly applied to a broad clinical group characterized by disorders of mental and bodily function which are believed to be chiefly psychological in origin; this definition has not been elaborated to differentiate the psychoneuroses from the psychoses, as the latter are not to be considered in this paper. Here, we are chiefly concerned with those psychoneuroses and other functional disorders in which bodily complaints or symptoms are prominent.

That there is a world of difference between typical psychogenic and other disturbances seems obvious. Yet, no sharp line can be drawn. Complex inter-relationships exist between psychological and bodily functions. Physiology in its broadest sense serves as a meeting ground. For the most part, structural disease shows itself through alterations of physiological functions. Psychogenic disorders may also show themselves by alteration of physiology and may, in certain cases, produce symptoms practically identical with those of organic disease. For example, tachycardia can be the result of exertion (physiologic), emotion (psychogenic), or organic disease (pathologic); and differentiation sometimes may require careful clinical study. There are many other physiological disturbances, such as vomiting, sweating, diarrhea, tremors, and vasomotor reactions, which may be produced by either psychological or physical causes (Case 1).

A similar statement may be made for many syndromes. A good example is the similarity which exists between anorexia nervosa and Simmond's disease. Anorexia nervosa is a functional disorder, certain cases of which are almost indistinguishable from Simmond's disease. In these functional cases we find the same cessation of menses, marked lowering of the basal metabolic rate, dryness of the skin, loss of hair, and extreme emaciation, which may terminate fatally. In fatal cases the pituitary gland is normal. The same picture, when produced by disease of the pituitary gland, is known as the classical Simmond's disease.

It is not unreasonable to suppose that continued functional alterations may produce tangible organic change. Just how much value should be placed upon psychogenic factors in such an event is difficult to say, but at least in some cases it seems that the psychogenic factor serves as a trigger mechanism, or a link in the chain of causation which

brings about the organic change (Case 2).

The complete clinical picture in any given case depends not only upon the type and severity of the disease process, but also upon the personality of the individual patient. It is well known that individuals of unlike temperament may react differently to the same disease or injury and, when suffering from febrile deliria, display different mental pictures (Case 3). Because of the personality factors which are ever present, it is possible to consider almost any case as having a functional aspect. Very often, then, instead of asking "Is this case functional or is it organic?", the question will be "How much of this case is functional and how much organic?"; actually, of course, the personality factors are insignificant in many conditions (Case 4).

There are many disturbances of bodily functions which cannot be placed clearly in either the organic or the functional group. The etiology and pathogenesis of these conditions are more or less obscure; and it is not illogical to suppose that emotional factors may play some role. A few conditions to which this statement applies are: essential hypertension, certain types of arthritis, peptic ulcer, mucuous colitis, ulcerative colitis, a number of allergic manifestations, and certain types of hyperthyroidism.

When a diagnosis of a psychoneurosis or other functional disorder is made, it should be based on positive as well as upon negative factors. At best, such a diagnosis is a clinical judgment which, as in other types of disease, is dependent upon the physician's final impression after studying the history, physical and laboratory findings, and perhaps the course of the disease. Some of the more common points which suggest functional factors are outlined as follows:

The nature of the *presenting complaints:* These are often multiple and vague. Such a patient commonly has a complaint about each system inquired into. He may complain of nervousness, being tired all the time, a lightheaded feeling, headache, backache, heart trouble, indigestion, cold hands and feet, loss of appetite, etc. A functional element is immediately suspected if the patient displays unusually marked concern over his disorder. This is especially common in depressed patients. Obviously, normal people vary greatly in this manner, some being quite indifferent to serious conditions, while others are greatly concerned over minor difficulties. Functional complaints are not uncommonly bizarre or unusual. The very nature of the complaint may suggest its emotional basis, for example: an atypical localized area of tenderness or pain, or tachycardia and choking, associated with apprehension or fear.

When a personality disorder is a diagnostic possibility, it is helpful to look for the following points: The patients often admit being "nervous," (usually meaning tenseness, restlessness, or irritability), worried, unhappy, or having crying spells. Insomnia with disturbing dreams is common. Self-concern often shows itself in a variety of ways other than in physical complaints. Loss of normal interests is usually quite marked. Such patients complain that they cannot read because they cannot concentrate; they do not enjoy social occasions, visiting with people, or perhaps even their family relationships. Some degree of frigidity or impotency is common. Chronic fatigue or "loss of pep" is occasionally distinguishable from the fatigue associated with organic disease, as in the case of anemia for example; the patient may be able to distinguish between the two or state that the fatigue which he suffers after a hard day's work is different in character. Many of these points may occur in patients who suffer from bodily disease (as tuberculosis); but their occurrence in the proper setting is highly indicative of a primary personality disorder.

The *past history* may indicate that the patient has long been considered nervous or that he considers himself an invalid, chronically complaining of one thing or another. A history of previous attacks of mental disorder or of "nervous breakdowns" is significant. Likewise, a difficult situation, such as a home problem, or an economic or personal problem, may appear to be etiologically significant.

Physical and laboratory studies are not necessarily entirely negative, but in order for a diagnosis of a functional disorder to be considered, they must be inadequate to explain the patient's complaints and symptoms or at least any given symptom which may be under consideration. In patients with "purely" neurotic disorders it is not uncommon for the physician to find one or more bodily ail-

ments, such as enlarged tonsils, decayed teeth, a hernia, etc. The treatment of these minor conditions, while in itself beneficial, actually may do harm by misleading both patient and physician into feeling that the underlying condition is being treated. Also it may serve to fix the patient's bodily concern, if the underlying condition is a functional disturbance characterized by hypochondriasis. In doubtful cases it is not wise to exhaust every conceivable physical possibility before considering the role of psychogenic factors lest much time be wasted and the patient discouraged or antagonized.

Removing or lessening a patient's symptoms by means of suggestion or other psychotherapeutic procedures is not an absolute indication that the disorder is functional. Most people are somewhat suggestible; and a rather suggestible individual, even though he suffers from an organic disease, is likely to be influenced by such procedures. On the other hand, when suggestion can dramatically remove a symptom such as paralysis of the legs, the functional nature of the condition is obvious. While it is true that neurotic patients are often particularly suggestible and are more apt to obtain considerable relief from such therapy, the fact that a patient obtains relief from a sterile hypodermic is not conclusive evidence that his difficulty is not organic. Pain is a psychic phenomenon and can be exaggerated or suppressed within limits by suggestion. Placebos often constitute very strong suggestion, and it is not to be wondered at, therefore, that they produce some effects on symptoms, such as pain.

As elsewhere, observation and study are great diagnostic aids. The presence or absence of shifting symptoms, emotional disturbances, behavior disorders or any of the above mentioned points are factors influencing the final diagnosis.

When the final diagnosis is that of a functional disorder, it is unwise to tell the patient "there is nothing wrong with you." He should receive adequate explanation as to the nature and significance of his symptoms. In so doing it is better to speak of "emotional" and "personal" factors rather than to use the terms "neurotic," "imaginary," and the like. It is also wise to tactfully adhere to the truth and to avoid excessive or groundless reassurance. In any event, one should not diagnose a patient as psychoneurotic and then treat him as though he were a malingerer.

If one keeps in mind the relationship between psychological and physical functions, it is easier to understand these cases and avoid the blunders which inevitably ensue if one has a dogmatic dualistic concept that body and mind are two separate and distinct things. Undoubtedly, very few physicians, if asked their opinion, would state that every condition must be either organic or functional; but in actual practice it is sometimes difficult to inhibit ourselves from attempting to push every patient into one or the other of these groups.

Cases

Case 1—This case illustrates the commonly met problem of a patient suffering from profound physiological disturbances for which no definite physical basis can be found. It is not certain that such cases are entirely psychogenic or even functional. In any event, they are definitely more complicated and difficult than the relatively simple psychogenic problems of a clear cut hysterical manifestation.

The patient was white, female, 21, unemployed. She was hospitalized because of recurrent attacks of abdominal pain and vomiting. Some abdominal pain had been present for over ten years with occasional severe attacks, lately of increasing frequency. Most of her teeth had fallen out and all were decayed in spite of adequate care. Constipation had been life-long. She had always thought of herself as having "a weak stomach" and was very fussy about her food. Her appendix had been removed long ago. Most of these gastrointestinal difficulties occurred to some degree in a number (at least 3) of her siblings. In addition, our patient had a left congenital hemiparesis.

The mother was very nervous, and there was other evidence of a neurotic background. The patient's personality was immature. She was "spoiled" and pampered at home and had frequent temper outbursts.

She had a very obvious hypochondriacal make-up. She showed much concern over her condition, had multiple complaints other than those referable to her gastrointestinal tract.

Although she improved rapidly and began

to eat fairly well a week after admission, it was felt that she should have the benefit of a laparotomy, as radiographic studies had strongly indicated a definite structural lesion which was interpreted as producing a partial intestinal obstruction. At operation no obstruction could be found, but a peritoneal parathecal pocket and a small ovarian cyst with some free blood were removed. Ten days after discharge she was readmitted with another typical attack of pain and vomiting which subsided in about a week.

Psychotherapy and re-education were utilized in dealing with both the patient and her mother. Though we felt that little of it was effective, they did carry out more of our suggestions after the second period of hospitalization. These suggestions referred to treating the patient as more of an adult, giving her more responsibilities at home, encouraging her to socialize, minimizing rather than magnifying her complaints, etc. Up to the present time (one year) she has had no attacks, has gained 20 pounds, and has a better outlook on life. She still vomits easily, especially when upset; and her constipation has remained unchanged.

Case 2—A chronic skin disorder improved with phenobarbital and cleared with psychotherapy. The patient is a white laborer, age 53. He was admitted to the Out-Patient Department of the University Hospital in the fall of 1938 because of a weeping exfoliative skin disorder which had been present for 15 years. The onset occurred while the patient was working in a flour mill. Though he frequently changed his type of work and place of living and visited many physicians and tried many treatments, he was never completely free from his skin lesions for any length of time. The dermatologist's diagnosis was contact dermatitis, exfoliative type. After nine months of study, no specific cause for his dermatitis was discovered, but it was noticed that he improved considerably on phenobarbital and relapsed whenever this drug was discontinued. Because he also complained of sleeping poorly, of being tense, nervous, and worried, psychiatric consultation and cooperation were requested.

There was little in his past history or background that was unusual. He had been married for 27 years, had four grown children. The first years of married life were satisfactory, but during the last 12-14 years, the patient's wife became increasingly unhappy, irritable, and complaining. The patient found this difficult to bear because he had a sensitive make-up and sought peace at any price. He further noted that the emotional scenes which occurred at home invariably precipitated an acute exacerbation of his skin disorder. Although he found it difficult to leave his family, he had experienced some improvement when living separately in another city.

During the course of his psychiatric treatment, the following interesting episode occurred: His wife came to town and paid him an unexpected visit. Almost immediately the patient began to experience a sharp prickling sensation in his fingertips and along the back of his hands. The next morning, over this same area, small vesicles appeared which were beginning to ooze. This was followed during the next 24 hours by the typical exfoliative eruption, in this instance limited to the hands. This attack, which occurred in July 1939, subsided much more quickly than was usually the case; and to date his skin has remained clear (except for one mild generalized attack) in spite of continual difficulty with his wife. He has also experienced considerable relief of his nervousness and insomnia. Hypnosis was included among the psychotherapeutic procedures used and apparently was most effective in this case.

Case 3—Unusual personality reaction masking brain tumor. White laborer, 45. When first seen in the Neuropsychiatric Clinic in August, 1938, the following complaints were elicited: headaches, dizziness, diplopia, vomiting, and difficulty in walking. These had been present for about two months. Though the symptoms as outlined are clearly suggestive of an intracranial lesion, the actual clinical picture was so atypical and confusing that it suggested a functional condition. The patient expressed himself vaguely, admitted nervousness, insomia, emotional depression, and described some financial and domestic worries; there was no confusion or other intellectual disturbance. Consequently, as the neurological examination and skull x-ray were negative, the patient was tentatively diagnosed functional neurosis and given a trial on sedation.

One month later, as he was vomiting and losing weight, he was admitted to the hospital. Medical and neurological investigations re-

vealed no positive findings except an unsteady, bizarre gait which could easily have been simulated. He was listless, insolent, uncooperative in his behavior; refused all food, but did not resist tube feeding; took no interest in anything and would only talk about himself and his troubles. Though it was then evident to the staff that all of his complaints, except the peculiar behavior, could be explained by a cerebellar tumor, management still seemed most logically directed against the behavior disorder. However, two months after his original examination, a beginning choked disc was noticed. A craniotomy was performed and a midline tumor impinging upon the cerebellum was removed from the floor of the 4th ventricle.

As further evidence of the fact that this patient reacted peculiarly to physical disease, it is noteworthy that he presented a photographic repetition of his preoperative behavior while suffering with a postoperative meningitis from which he eventually recovered. Though dizziness and difficulty in walking have continued, his behavior has returned to normal.

This patient was difficult to diagnose because of his peculiar personality reactions which tended to mask and detract from otherwise typical symptoms. He presented a striking contrast to other patients similarly afflicted. Fatal consequences could have resulted had the clinicians permanently accepted the assumption of functional neurosis, neglected further examination and failed to recognize at once the early development of choked disc.

Case 4—The occurrence of an anxiety neurosis with prominent functional cardiac symptoms in a person with a readily demonstrable organic heart lesion. A married woman of 31, shortly prior to admission to the University Hospital, developed "heart attacks" characterized by palpitation, choking sensation, and fear of impending death. She had had similar brief episodes earlier in her life, the first occurring at 17 when a diagnosis of "heart trouble" was made. Because of this, our patient avoided over-exertion and led a carefully regulated life.

Physical and x-ray findings led to a diagnosis of congenital heart disease, probably sub-aortic stenosis. There was nothing to indicate that she had ever had cardiac failure, but the presence of pallor, small pulse, and cold extremities gave evidence of reduced circulation. Because of the unusual features in both symptoms and findings, it was necessary that her cardiac status be carefully evaluated. Being apprehensive, the patient apparently misinterpreted the numerous examinations and tests as indicating either that death was imminent or that she was suffering from some dreaded disease, such as cancer. In any event, she became worse. Her attacks grew more frequent; she complained of queer feelings; seemed detached and had difficulty in expressing herself clearly. It was noted that she was nervous, tense, unhappy, slept poorly and had difficulty in concentrating.

When her exact status was carefully explained to her, she experienced considerable relief. She was found to have an immature personality with an extra-marital conflict as the probable precipitating factor. A few discussions helped her to understand and face her problems. This led to complete relief from the anxiety state with the disappearance of tachycardia and other symptoms which were at first thought to be due to the cardiac disorder.

PSYCHOTHERAPY FOUNDATION ESTABLISHED

The Lake George Foundation, Inc., was recently established at Lake George, New York, to work with the Tratelja Farms, Diamond Point on Lake George, for the purpose of extending medical care and occupational therapy to patients of moderate means, who are afflicted with maladjustments and psychosomatic disorders. The Foundation will also assist in developing mental hygiene and child guidance clinics in the city of Glen Falls, New York. The Foundation's funds from donations will be administered by a Board of Trustees selected from Civic Workers, Social Workers, and Business Administrators, both local and from distant cities. Mr. Henry E. H. Brereton, Diamond Point, is the President of the Foundation.

Experimental Study of Essential and Induced Hypometabolism Syndrome

Interpretation and Clinical Significance

A. W. HACKFIELD, M.D.
Seattle, Washington

Dr. Arnold William Hackfield died April 26, 1940, of a cerebral hemorrhage. He was returning to Seattle after a hurried trip to the bedside of his brother, Dr. Alfred Hackfield, a general surgeon in Houston, Texas, who had been seriously ill.

He was born October 3, 1899, in Texas. At the outbreak of the World War he was attending a business college in San Antonio. After completing this course, he enlisted in the United States Navy and remained in service until August, 1920. Upon leaving the service he entered Lafayette College, but at the end of his freshman year transferred to the University of Michigan, from which school he graduated. He completed a two years general internship at Letterman General Hospital in San Francisco, retaining a commission in the Reserves. Six years were then devoted to internships in neurology and psychiatry in Boston, Philadelphia, Berlin, Germany, and Zürich, Switzerland. He came directly from Zürich to Seattle, where an office was established in 1933.

In 1937, he was a delegate to the International Congress of Child Psychiatry and Mental Hygiene at Paris. At this time, he spent six weeks in the clinics in Vienna and Switzerland, when the original experiments with insulin and metrazol treatments were being conducted, in order to study closely the technic and the results obtained.

His chief interests were his profession, research, teaching and writing. He has conducted courses through the University of Washington Extension, a clinic at Marine Hospital and gave endlessly of his time to the welfare organizations of the state, especially those working with children. At the time of death, Dr. Hackfield was the child welfare chairman of University Post No. 11, the American Legion. He was a prolific writer, the author of numerous articles in the field of psychiatry, and was in the midst of translating the works of Dr. Schultz-Hencke for an American publishing house. His acute intellect and boundless energy enabled him to accomplish a tremendous amount of work in the short span of his life.

The syndrome characterized by a low metabolic rate without clinical myxedema, with or without constipation, amenorrhea, or other hypostatic visceral symptoms, must be recognized as a functional entity without pathologic anatomic basis. In the treatment approach, endocrine preparations may prove disappointing if not contraindicated, whereas non-endocrine medication, whether or not coupled with other forms of therapy, prove superior in the management of this syndrome.

Among investigators who favor a pathologic anatomic etiology of this syndrome is Brown[1] who reported a series of cases in which he recognized a relationship between a low metabolic rate, constipation and low acidity. He postulated that these symptoms were due to hypothyroidism. Levy[2], in doing routine metabolic tests on a series of patients with constipation or "spastic colitis," found that a majority showed a low metabolic rate. He also concluded that hypothyroidism was the responsible factor.

Blumgarten[3], on the other hand, emphasized that a low metabolic rate is not indicative of true hypothyroidism and for cases with this symptom complex reserved the term "constitutional asthenics without hypothyroidism." Eusterman[4], likewise collected a series of cases with a low metabolic rate which he classified as psychoneurotic. Davis[5], in an interpretation of Berkman's series, finds the cause in inanition. Lahey[6], also acknowledges the existence of this type of syndrome and rests his differential diagnosis of those cases which are suitable for thyroid, on the cholesterol content of the blood; if it is 200+ milligrams per 100 ccm of blood, he considers them suitable for thyroid medication.

Reimann[7], reported a series of 16 women patients, many of whom showed a low metabolic rate accompanied by menstrual disturbances and a continued low grade fever, in whom thyroid medication failed to alter the metabolic rate significantly, nor did it influence the temperature. All but five of these patients were considered neurotic.

These latter authors recognize the functional character of this syndrome and most concur in the opinion that thyroid medication is short-lived in its effectiveness, and in some instances may prove disappointing, if not contraindicated. With the exception of Davis[5], none of them offer an explanation beyond applying the terms "constitutional asthenic" or "psychoneurotic." The purpose of this communication is to give a dynamic interpretation to this syndrome based on clinical observation and controlled laboratory experimentation.

In a routine psychiatric practice, it was observed that certain patients who consulted

us because of an emotional problem, in the course of a treatment regime, presented the following rather constant findings: fatigue, lack of interest, constipation, declining sexual potency in the male, amenorrhea and other menstrual dysfunctions in the female and failing appetite. A physical examination usually proved essentially negative with the exception of a tendency to hypotension. As a by-product it was frequently revealed that these patients had previously consulted internists and were told that they had "insufficient thyroid." This observation was so prevalent that the following study was undertaken.

Plan of Experiment

From a routine psychiatric practice, patients* who presented the above complaints were chosen and subjected to a metabolism test, the *same technique* being adhered to throughout this entire experiment. The patient was instructed to retire early. He came to the clinic the next morning in a fasting state, was allowed to rest and then given the test. At the very outset it became apparent, which subsequent observation corroborated, that the metabolic rate is variable under circumstances which aggravate the emotional state of the patient.

Case	*Date*	*Metabolic Rate*
A	10- 1-36	+ 32
A	10- 2-36	+ 1
A	10- 3-36	+ 0
B	10-24-36	+ 14
B	11-25-36	— 3
C	2-23-37	+ 19
C	2-25-37	— 4

Table I.

An initial elevated metabolic reading on repetition reached a zero to minus reading.

Table I shows that an elevated reading of an emotionally anxious patient is unreliable, a fact recognized by some clinicians and experimentally demonstrated by Ziegler and Levine[8]. On the other hand, an initial minus reading seldom goes higher; on repetition it may go lower. However, an initial low metabolic rate is of clinical significance, especially when accompanied by the above symptom complex. Patients with an *initial* low metabolic rate, chosen on the above criterion, were next subjected to controlled experimentation, using non-endocrine medicaments, physical exercise, psychotherapy, alone and in combination.

Metabolic Stimulants

The work of Myerson[9] and his associates seems to indicate that the pharmacologic action of benzedrine sulfate is in the nature of a metabolic stimulant. The type of patients covered in their report, as well as those of Nathanson[10], are closely akin to the group here under discussion. Therefore, it was concluded that benzedrine sulfate was the drug of choice, notwithstanding the fact that Myerson reported a negative influence upon the metabolic rate. Since his reports indicate that the tests were taken shortly after the administration of the drug, it was desirable to determine the effectiveness of benzedrine sulfate as a metabolic stimulant when administered in continuous small doses. Furthermore, to determine the specificity of the drug as a metabolic stimulant, several patients were subjected to controlled procedures. These procedures embodied variation in the dosage and the continuity of administration; the drug was administered in 5 mgm. doses two to three times daily. All other conditions remained constant. At strategic intervals the patients were subjected to laboratory examinations. The results are given in Table II.

Case	*Benzedrine Sulfate*	*Date*	*Metabolic Rate*
D	no	10-19-36	— 17
D	5 mgm b. i. d.	11-19-36	+ 6
D	no	1-22-37	— 22
E	no	10-30-36	— 5
E	no	12- 5-36	— 12
F	no	12-19-36	— 9
F	no	1-10-37	— 18
F	5 mgm b. i. d.	2- 7-37	+ 11
G	no	10-10-36	— 24
G	5 mgm b. i. d.	10-30-36	+ 16
G	no	11- 6-36	+ 1
G	5 mgm b. i. d.	11-28-36	+ 11
H	no	1- 7-37	— 11
H	5 mgm b. i. d.	1-15-37	— 10
H	5 mgm t. i. d.	1-22-37	+ 5
H	5 mgm b. i. d.	1-29-37	— 10

* All the subjects in this experiment were physically and nutritionally sound as far as could be determined by a physical examination.

Case	Benzedrine Sulfate	Date	Metabolic Rate
H	5 mgm t. i. d.	2- 5-37	+ 5
I	no	1- 7-37	— 18
I	5 mgm b. i. d.	1-13-37	— 8
I	5 mgm t. i. d.	1-22-37	+ 22
J	no	3- 1-37	— 17
J	5 mgm b. i. d.	3-14-37	— 3
J	5 mgm	3-25-37	+ 2
K	no	11-27-36	— 20
K	5 mgm t. i. d.	12-14-36	+ 25

Table II.

These cases showed an initial low metabolic rate. Benzedrine sulfate administration resulted in rise. Discontinuance of drug resulted in a drop. Negative readings without benzedrine sulfate administration remained negative. Variation in dosage had a corresponding specific effect.

The immediate clinical effect was an increase in the sense of well-being, an improvement leading to a complete disappearance of the physiologic and the psychologic symptoms. Discontinuance of the drug produced a fall in the metabolic rate with an exacerbation of both types of symptoms.

To test the relative merits of benzedrine sulfate and thyroid medication, a patient was chosen whose chief complaints were constipation, fatigue, amenorrhea and anxiety-depressive features precipitated by childbirth. She had been taking three grains of thyroid extract per diem for a period of two months without relief. Without changing the routine, she was first subjected to a metabolism test and then placed on a regime alternating the two medicaments. Table III shows that there was a definite symptomatic improvement with benzedrine sulfate and an immediate relapse when she was changed back to thyroid, each relapse being accompanied by a fall in the metabolic rate. As already pointed out by other workers, thyroid proved ineffective in this particular syndrome.

Case	Drug	Date	Rate	Results
L	Thyroid	12-21-36	+ 1	Negative
L	1 gr. t. i. d. for 2 months			
L	Benzedrine sulfate 5 mgm t. i. d.	1- 7-37	+ 9	Positive
L	None	1-14-37	— 14	Negative
L	Thyroid	1-21-37	+ 1	Negative
L	1 gr. t. i. d.			
L	Benzedrine sulfate 5 mgm b. i. d.	1-29-37	+ 1	Positive
L	t. i. d.	2- 6-37	+ 6	Positive

Table III.

Through the thyroid extract produced an elevation in metabolic rate there was no subjective improvement in the symptoms. The effects of benzedrine sulfate were more specific in relation to both findings.

Because of the social application of alcohol as a pick-up in cases of fatigue, its effect on the metabolic rate was studied. The author and others formed the subjects for this experiment. As a matter of interest, exercise as a possible stimulant was included. The laboratory results disclosed for each a specific rise in the metabolic rate, which was immediate, as shown in Table IV.

Case	Stimulant	No. of trials	Mean Metabolic Rate
Author	None-Determination of Base Rate	8	+ 10
Author	Alcohol 2 ounces	6	+ 39
Author	Tennis 2-4 sets	4	+ 25.6

Case	Initial Rate	Stimulant	Rate one hour later
M	+ 12	Alcohol 2 ounces	+ 24
N	— 24	Alcohol 2 ounces	— 5
O	— 6	Alcohol 2 ounces	+ 15
P	— 7	Alcohol 2 ounces	+ 14

Table IV.

This table shows the specific effect of alcohol. Only the mean metabolic readings of the author are tabulated. For the other four subjects the individual readings before and after the ingestion of two ounces of alcohol are recorded.

To test further the effect of systematic physical training on the metabolic rate, as reflected by an initial reading, the coach of

the University of Washington crew consented to have volunteers of the crew tested. Table V shows that all but two of nine showed a normal plus reading. The two borderline cases were both substitutes, and one showed a decidedly inhibited personality.

Crew Member	*Initial Metabolic Rate*
1	+ 11
2	+ 10
3	+ 6
4	+ 1
5	+ 11
6	− 1
7	+ 4
8	+ 6
9	+ 14

Table V.

Initial metabolic rate of nine members of the University of Washington crew tested on April 4, 1937.

It seemed of interest to find a medium that would depress the metabolic rate. For this purpose tobacco was chosen. The technique consisted of the usual routine. Following the initial reading in the fasting state, the patient remained in position, but was permitted to smoke cigarettes until he experienced a sensation of dizziness. At this point, he was given another metabolic test. The time interval between the initial and the final reading averaging about ten minutes. Whenever the testee was first subjected to one of the metabolic stimulants previously employed, there was practically no drop following the use of tobacco. The results are given in Table VI.

Case	*Initial Metabolic Reading without stimulants*	*Metabolic Reading after smoking*
Author	+ 16	− 30 (2 cig.)
Author	+ 14	+ 4 (1 cig.)
Q	+ 16	+ 6
R	+ 4	− 12
S	+ 4	− 4
T	+ 19	+ 6

Case	*Initial Metabolic Reading with stimulants*	*Metabolic Reading after smoking*
T	(Exercise) + 24	+ 24
Author	(Exercise) + 24	+ 22
Author	(Alcohol) + 32	+ 32

Table VI.

The above readings show the effect of smoking on the metabolic rate with or without previous stimulation. The acute drop in the metabolic rate without previous stimulation was accompanied by a subjective sensation of oppression and anxiety.

Benzedrine sulfate combined with psychotherapy

Drugs which facilitate the affective rapport between physician and patient have been employed in psychotherapy. Sullivan[11] has utilized alcohol. Davidoff[12] has employed benzedrine sulfate for his self-absorbed patients. Furthermore, the initial observations which instituted this study were made on psychoneurotic patients. Therefore, it seemed of interest to utilize benzedrine sulfate as an adjunct to psychotherapy. Clinically there was a distinct improvement in the patient's rapport and in his facility in social expression, which speeded up the progress of the analysis. Metabolism tests done at strategic

Case	*Stimulation*	*Date*	*Metabolic Rate*	*Blood Pressure*
U	Initial	1-11-37	− 1	
U	5 mgm b. i. d.	1-29-37	+ 4	
U	5 mgm t. i. d.	2- 4-37	+ 6	
U	None psychotherapy continued	4-15-37	+ 4	
V	Initial	10- 3-36	− 17	
V	5 mgm b. i. d.	10-10-36	− 4	
V	5 mgm b. i. d.	10-22-36	+ 4	
V	None—psychotherapy cont'd.	11-19-36	+ 4	
V	therapy cont'd.	1-21 36	+ 9	
W	Initial	12-22-36	− 4	90/60
W	5 mgm b. i. d.	1-17-37	0	90/60
W	5 mgm b. i. d.	2- 7-37	+ 2	110/80
W	None—psycho. therapy cont'd.	3- 3-37	+ 20	115/80

Case	*Stimulation*	*Date*	*Metabolic Rate*	*Blood Pressure*
X	Initial	10-10-36	— 24	
X	5 mgm b. i. d.	10-22-36	— 1	
X	5 mgm t. i. d.	10-30-36	+ 16	
X	5 mgm t. i. d.	11-28-36	+ 11	
X	None—psycho-therapy cont'd.	12-12-36	+ 24	
X	therapy cont'd.	12-19-36	+ 11	
X	therapy cont'd.	2- 5-37	+ 12	
X	therapy cont'd.	3- 5-37	+ 12	

Table VII.

All these patients showed an initial minus reading and a positive response to benzedrine sulfate. After discontinuing the drug and proceeding with psychotherapy, the metabolic reading and clinical improvement remained positive. The hypotension in case "W" improved with benzedrine sulfate and the blood pressure remained up with continued psychotherapy.

points revealed a definite rise. Then the benzedrine sulfate was stopped, but the psychotherapy was continued and the patient subjected to laboratory tests. The patients reported a continued sense of well being without a return of the physiologic and psychologic symptoms. The results shown in Table VII verified the hypothesis which predicates that a low metabolic rate without clinical evidence of myxedema is of a functional character; viz., the symptomatic expression of a generalized state of inhibition.

Next, patients of the same symptom type* were chosen and subjected only to psychotherapy. Case "Y" had a previous sub-total thyroidectomy. Case "ZZ" suffered from a severe inhibition neurosis clinically allied to schizophrenia. Case "Z" presented a declining sexual potency, was self-absorbed, had lost interest in the objective world and at the time of consultation brooded over a conflict inherent in his work. Though cases "Y" and "Z" did not show a very low initial metabolic rate, case "ZZ" did. However, following intensive psychotherapy, all three patients showed a significant rise as compared with the initial reading which was again accompanied by a disappearance of the presenting symptoms. The results are shown in Table VIII.

Case	*Analysis without benzedrine sulfate*	*Date*	*Metabolic Rate*
Y	Initial	10-20-36	— 3
Y	Psychotherapy	11-21-36	+ 11
Y	Psychotherapy	2- 1-37	+ 11
Z	Initial	11- 8-36	+ 3
Z	Psychotherapy	12- 5-36	+ 22
ZZ	Initial	5- 1-36	— 30
ZZ	Psychotherapy	9- 1-36	0
ZZ	Psychotherapy	10- 1-36	+ 8

Table VIII.

These cases showed a rise of the metabolic rate in response to effective psychotherapy without the use of any medication.

Summary of Experimental Data

Patients with a neurotic depressive personality structure with associated hypostatic visceral symptoms and hypometabolism were subjected to various controlled procedures. Using the metabolic rate as an index, it was found that an elevated first reading in an anxious patient was of no significance; it may be emoto-genetically conditioned. Further tests may show a drop. An initial minus rate may show a further decline, seldom shows a rise.

On the basis of clinical and analytic data, the hypothesis was constructed that this hypostatic visceral-depression-hypometabolism syndrome constitutes a functional state of generalized inhibition without any pathologic anatomic basis. This syndrome has been benefited by the administration of benzedrine sulfate, suggesting that if the clinical improvement be paralleled by a corresponding elevation of the metabolic rate, its measurement would provide an index possible of laboratory control; that the use of this same index to check the effect of non-chemotherapeusis would constitute an objective criterion to establish or disprove the functional character of this symptom complex.

The experimental results revealed that paralleling the generalized improvement following the administration of benzedrine sulfate, this drug exerted a specific elevation of

* The psychopathologic content as revealed in the analyses of these patients in both groups is not included in this presentation.

the metabolic rate; that its discontinuance produced a drop and symptomatic relapse; thyroid medication had no appreciable effect. Benzedrine sulfate used as an adjunct to psychotherapy facilitated enhanced responsiveness and after discontinuing it, but proceeding with psychotherapy, lasting results were obtained as measured by the metabolic rate and the clinical adjustment of the patient.

The use of alcohol had a similar effect upon metabolism and enhanced responsiveness; in some measure muscular activity produced similar results. On the other hand, the smoking of tobacco during the fasting state produced an immediate, though temporary, decline in metabolism which was lacking if the testee had been previously stimulated. Analytic therapy, embodying a generalized rehabilitation of the patient's interest and activities without any medication, had a similar favorable effect upon metabolism and the symptom picture.

Comparison of Clinical versus Laboratory Data

The so-called exhaustion (Nathanson) and neurotic-depressive states (Henry[13], Reimann) are associated with hypostatic viseral symptoms and hypometabolism and respond favorably to benzedrine sulfate (Nathanson, Myerson). Correspondingly, the laboratory results showed that benzedrine sulfate produced a rise in metabolic rate paralleling the symptomatic improvement.

Beach[14] demonstrated that hypometabolism (reduced oxidation) in a myxedematous patient predisposed to anginal attacks, while medication which raised the metabolic rate resulted in improvement; a decline in the metabolic rate again precipitated further attacks. The literature abounds with reports of the correlation between anoxemia in cases of severe anemia (reduced oxygen carrying capacity of the blood) and a predisposition to anginal attacks.

Brooks[15] quotes Heberden as rating alcohol second only to the opium group in point of efficacy in controlling anginal attacks. Both Brooks and Wyckoff[16] recommend the judicious use of alcohol coupled with a complete reorientation of the patient's life as the most effective method of managing the anginal syndrome. The laboratory results indicate that alcohol raises the metabolic rate and thereby probably increases the oxidation necessary to counteract the anginal attack.

The harmful effect of tobacco smoking on anginal patients is a clinically established fact and has been accepted by White and Scharber[17], Lambert[18] and stressed by Moschcowitz[19], who in 1929 reported a series of cases which he termed "tobacco angina." In a personal communication of February 29, 1937, this author reports that all but one of these patients are still well and alive after abstaining from tobacco. He states that there is no doubt that a genuine tobacco angina does exist and that tobacco smoking profoundly influences real coronary disease. The laboratory data shows that tobacco smoking during the fasting state produced an immediate drop in metabolism and a subjective sensation of anxiety and impending oppression. This reaction was absent if alcohol or other stimulants had been previously employed. And lastly, increased alcohol consumption enhances the need to smoke.

A correlation of the assembled clinical data regarding the action of alcohol and of tobacco smoking in the control and in the precipitation, respectively, of anginal attacks with the laboratory findings of the effect of these agents on the metabolic rate would suggest a plausible explanation of the above empirically observed facts. Anything that produces an immediate or sustained improvement in oxidation will reduce the tendency to anginal attacks. Laboratory tests indicate that alcohol and benzedrine sulfate produce this effect; both have been clinically employed in the treatment of angina. Anything that produces a chronic or sudden anoxemia, whether constitutional (anemia, myxedema, coronary sclerosis) sudden exertion with associated dyspnea or tobacco smoking, suddenly lowering the oxidation rate, may initiate an anginal attack in a patient so *predisposed.* Laboratory tests seem to indicate that tobacco smoking produces such reduced oxidation. This hypothesis of suddenly reduced oxidation through tobacco smoking as a precipitating factor of attacks of pain in anginal patients gains support from the experimental work of Rothschild[20], who was able to induce pain identical with that complained of spontaneously by anginal patients,

by inducing a state of anoxemia with a rebreathing apparatus.

Dynamic Interpretation

Using the metabolic test as a means of laboratory control, these experimental results, as measured by clinical improvement with an associated rise in metabolic rate, demonstrated that the essential hypometabolism syndrome responded more favorably to non-endocrine medication, thus eliminating hypothyroidism as an etiologic factor. Furthermore, similar results were obtained with psychotherapy, thereby establishing the functional character of the symptom complex.

To appreciate the concept "functional" we must discard the medically useless contrast between physical and psychical and consider all intra- and extraorganismal expression as manifestations of a physiologically and psychologically integrated unit. The quality of an organism's functional expression is determined by: (a) its organic structure and physiology; (b) the state of its habit integration.

Anything which directly or indirectly affects the organic structure will affect its physiologic functions and correspondingly the organisms' external symbolic expression. In this category we have illustration such as a severe anemia producing an anoxemia and a compensatory circulatory response and increased metabolic rate. Correspondingly, the patient will manifest a reduction in his capacity for expression in terms of reality adjustment, manifesting itself clinically through fatigue, loss of interest, and inactivity. He possesses the proper outlets, but lacks the physical energy to exercise them.

Conversely, a physically sound organism in a good state of nutrition may be unable to express itself effectively in response to situational demands because of subjectively inadequate habit integration or continued objective repression. Clinically we get in such an organism a picture of fatigue, loss of interest and inactivity.

The organism responds to situational demands through conditioned symbolic expression on the corticomotor level; an inadequately conditioned state of such responses means failure to meet effeciently the demands of life. This diametrially opposed state of corticomotor responsiveness derives its energy from its anatomic-physiologic correlates—the sympathetic and parasympathetic nervous system. An increased or decreased expression in terms of effort expended will affect a corresponding autonomic response.

Organically and nutritionally sound subjects, deficient in adequately conditioned corticomotor externalization, who fail to discharge liberated energy through productive muscular activity, will experience a state of tension (inhibition). To maintain a physiologic equilibrium, the energy conserving mechanism is activated resulting in reduced energy production; that is, a reduced rate of oxidation (hypometabolism). Once an organism has been conditioned to such a state of reduced physiologic activity, either due to subjective inhibition, or objective repression, it will be unable to respond to situational demands. This reduced state of responsiveness, of varying degrees of intensity, is popularly recognized as "being out of training." Once the energy expending mechanism has adjusted itself to a reduced corticosymbolic function, from a therapeutic angle it is necessary to stimulate the former mechanism to meet suddenly imposed symbolic demands. This was accomplished chemically by the use of benzedrine sulfate and alcohol, and this stimulation effected an increase in the metabolic rate.

This experiment has demonstrated that improvement could only be maintained with continued administration of the drug, indicating that its use is limited. This observation predicates that if chemotherapy could be supplemented by measures improving the reality adjustment, it would produce a lasting effect. The application of a technique which gradually facilitated practical adaptation without chemotherapy should produce the same results. The actual clinical and laboratory results have corroborated this hypothesis.

The application of chemotherapy is most effective in that type of patient who previously had attained a reasonable measure of practical adjustment with a subsequent regression. The indiscriminate use of benzedrine sulfate in any patient who shows so-called neurasthenic characteristics is ill advised, as shown by the work of Wooley[21]. Its use should be limited to those cases which show a minus or border line metabolic reading; this objec-

tive factor constitutes the safest differential for the physician without psychiatric training. Patients with inadequate social adaptation who through intrapsychic tension (ruminative tension states) stimulate sympathetic function may show a positive metabolic rate, yet objectively manifest neurasthenic symptoms. Here additional stimulation with a sympathicomimetic drug such as benzedrine sulfate, not producing cortical depression, will only enhance the patient's internal anxiety and tension. However, in properly selected cases this drug has a distinct value in obtaining an immediate effect, and its maximum benefit is usually not obtained until after a week's controlled administration. This therapeutic adjunct should be supplemented with a program of reconditioning and reorientation with respect to the life situation (psychotherapy).

Correspondingly, it is axiomatic that the application of any agent which chronically or suddenly depresses oxidation will produce opposite effects in the nature of subjective and clinical manifestations, especially in patients with a preexisting reduced oxidation.

Clinical Significance

These experimental results, both in the nature of clinical observation and laboratory control, show that the functional hypostatic syndrome is best treated by chemotherapeutic adjuncts supplemented with psychotherapy. In the former category, benzedrine sulfate holds first place. However, not being a cerebral depressant, its use is limited to patients without intrapsychic tension. The differential diagnostic criterion is the presence or absence of a low metabolic rate.

Alcohol produces a dual physiologic response, a cortical depression and autonomic stimulation, making it more effective in syndromes with hypermetabolism and anxiety neurotic manifestations. Angina pectoris constitutes such an entity. In its management the judicious use of alcohol coupled with psychotherapy has been recommended by Brooks and Lambert. A clinically more desirable substitute is the combination of barbituric acid derivatives and benzedrine sulfate coupled with psychotherapy. Tobacco smoking, which further reduces the rate of oxidation, whether the latter is primarily physiologically or functionally impaired, is contraindicated.

Summarizing the clinical and laboratory results revealed by the experimental study, the following therapeutic application suggests itself:

(1) The need of a thorough physical examination and investigation of the patient's emotional life supplemented by a metabolic test if depressive-neurotic symptoms are apparent.

(2) Those cases with functional hypostatic visceral symptoms and hypometabolism should be given judicious chemotherapy supplemented by a reorientation of the patient's habits of living based on the psychological study.

(3) In that type of anxiety-neurotic syndrome showing "neurasthenic" symptoms, but associated with hypermetabolism, the chemotherapeutic adjunct must be a drug capable of cortical depression and autonomic stimulation, such as alcohol. The combined administration of barbiturate derivatives with benzedrine sulfate suggests itself (a combination of nembutal, grains one, and benzedrine sulfate, mgm. five, b. i. d. or t. i. d., as the base demands, has proven successful* as preferable and more effective.

(4) In all "neurasthenic" symptom complexes, with or without hypometabolism, the smoking of tobacco should be curtailed.

(5) In the absence of any organic-physiologic organismal impairment the chemotherapy serves merely as a paliative measure and lasting results can only be obtained with intensive psychotherapy.

(6) The physician can administer simple forms of psychotherapy in a routine practice with appreciable effect, but those cases offering complicated personality problems should be referred to a psychiatrist for appropriate treatment.

(7) These experimental results indicate that an optimum efficiency is attained whenever a person's metabolic rate is a plus 10 or better.

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* It is difficult to predicate the exact dosage of the two respective drugs in this combination therapy. In some cases the barbiturate may have to be increased by one-half grain, in others, the benzedrine sulfate by two and one-half mgms. Only after clinical experience with the individual case can the proper dosage and the appropriate effect be ascertained.

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Pain Relief by Local and Generalized Refrigeration

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The prompt relief of pain which has followed refrigeration observations in metastatic malignancies,[1,2] has led to the wider use of this method for control of severe or chronic pain in other conditions.

Where continuous local application of cold (40°-50° F.) by coil or instrumentation is not possible, in deep pelvic, visceral or thoracic involvement, generalized refrigeration for a period of twenty-four to seventy-two hours, has been followed by relief of pain lasting from two days to as long as three months.

Narcotics can be withdrawn in almost every instance, with consequent general nutritional improvement and benefit to the patient.

The striking clinical response noted in otherwise intractable problems of pain has led to the more frequent use of generalized

1 Fay, Temple & Henny, G. C.: "Correlation of Body Segmental Temperature and its Relation to the Location of Carcinomatous Metastasis, *Surg. Gynec. & Obst.*, 66; 512-524, Feb. 15, 1938.
2 Smith, L. W. & Fay, Temple: "Temperature Factors in Cancer and Embryonal Cell Growth," *J. A. M. A.*, Vol. 113, 653-660, Aug. 19, 1939.

refrigeration, as experience has indicated that this can be carried out with apparently little risk, if the same degree of care and judgment is exercised as in the giving of a general anesthetic.

The method used by us at the present time has been found to be safe* and quite simplified.

N — Methylcyclohexenylmethylbarbituric Acid (Cyclural) (5-15 grains) is given the patient intravenously and as soon as anesthetized, transfer is made to a room where the temperature can be maintained between 50° and 60° F. The patient is then surrounded and covered with finely cracked ice, from the arm-pits to the knees. Rectal temperature reading should be made frequently, or constant thermocouple readings maintained on a recording dial thermometer. (Fig. 1).

Shivering reactions usually begin at about 97° F. rectal and continue actively until the temperature falls to 91° F. Below this level such movements tend to disappear and the patient becomes quiet around 90° F. Approximately one to two hours are required to reach this level.

When the rectal temperature reaches 88° F.- 90° F. the ice is removed, the bed made-up dry, and the patient allowed to remain exposed in the room temperature of 60° F. (Fig. 1).

Peripheral blood-pressure and pulse may be obtained, or if absent, an apex beat of between 60 and 100 can be considered satisfactory. Respirations should vary between 20 to 26 per minute.

Petroleum jelly gauze should be placed over the eyes to prevent drying of the cornea, as tear formation ceases at this low body temperature. Safe rectal temperatures between 85° F. to 88° F. may be maintained by adding blankets when there is a tendency for the temperature to fall below this level, and by applying ice-bags if a rise occurs.

Sedation is maintained by paraldehyde (drams 2 to 8 in a 20 per cent solution of acacia) given as needed by nasal tube or rectum, for restlessness, although six to thirty-six hours may elapse between doses. The patient tends to sleep unless deliberately aroused. Observation may be continued thus for five to eight days.

Small amounts of saline may be given every two hours by nasal tube and small quantities of whiskey may be efficacious. Patients are able to take soft foods during the period of refrigeration, if aroused and encouraged. Swallowing of liquids should not be attempted as the swallowing reflex is often slow and inspiration may be followed by choking.

Termination of hypothermic states can be obtained by surrounding the patient with warm blankets, hot-water bottles and by giving a hot coffee enema and warm food. Slow return to normal temperatures (6-10 hours) seems more desirable along with the giving of ample fluids; intravenous, if necessary, to restore blood volume.

Symptoms which should warrant the termination of refrigeration are: (a) Respirations above 36, or irregular, (b) pulse over 120 (fibrillation has been treated with Quinodine as successfully under refrigeration as at normal temperatures). Pulse irregularities, (c) stupor.

During the use of Avertin and Amytol last May, two instances of cerebral edema occurred; one was fatal during refrigeration, the other, fourteen hours after return to normal temperature. Large doses of Barbiturates have since been avoided.

In more than eighty "inductions" during the past six months, no other contra-indications have appeared to us at levels of 80° F. rectal or above. Body color remains good in spite of its cold state. There should be no cyanosis. With less sedation, pulse and blood-pressure. are retained in the periphery.

Besides relief of pain in cases of deep chest, abdominal or pelvic involvement, pain in the

No. of cases	*Cause of Death*	*Complications*
1	Cerebral edema (Barbiturates).	Terminal Metastatic Ca. lungs.
1	Inspirational suffocation.	Terminal Metastatic Ca. of larynx.
1	Hypothermia Temp. 74° Rectal F.	Ca. colon and pelvis Colostomy.
1	Stupor-cardiovascular failure.	Lymphosarcoma with ascites.

* Four deaths have occurred during refrigeration; all were hopeless cases of malignancy. No deaths or complications have occurred in non-malignant, uncomplicated cases.

face, jaw, neck, brachial plexus, bladder, back and along the sciatic has been promptly relieved either by local or generalized methods of refrigeration. We have no longer found the use of narcotics necessary in such cases and operative intervention for pain (chordotomy and rhizotomy) has not been required in this clinic during the past two years.

Localized refrigeration can easily be applied to certain cases and is accomplished with coils of tubing in which cold water is allowed to circulate at the desired temperature. Generalized refrigeration can be induced for a matter of twenty-four hours or longer, where deep and intractable pain persists.

Temple University Hospital.

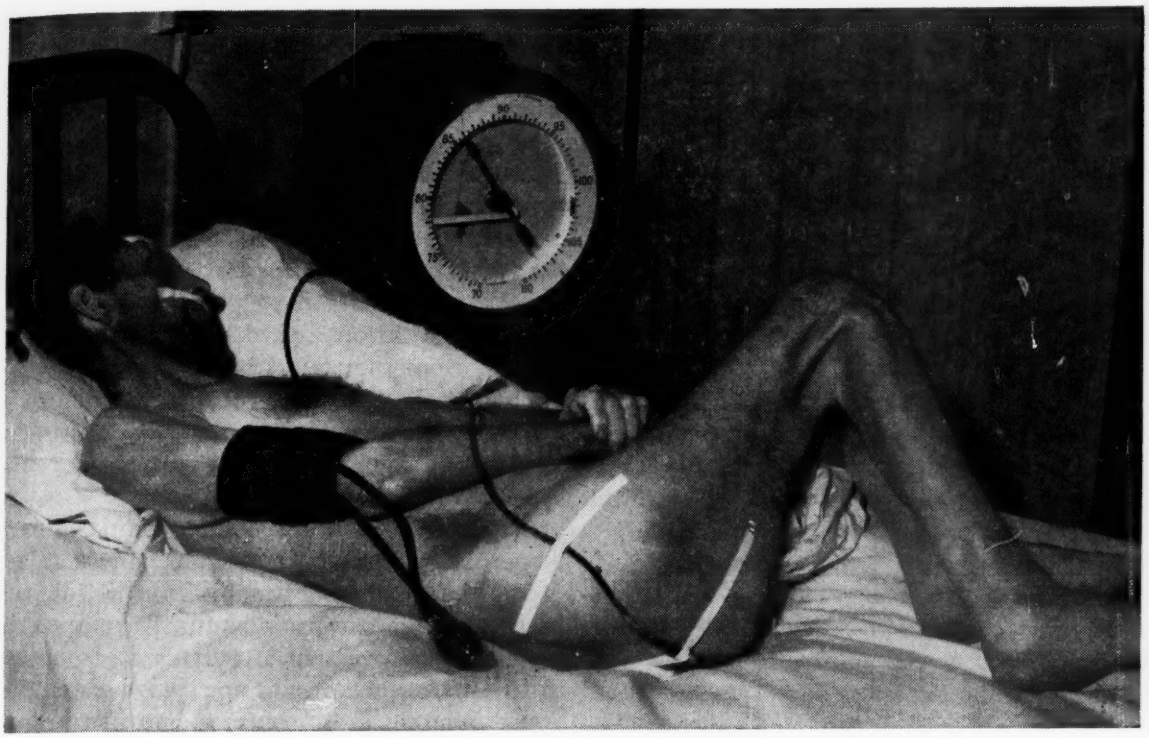

FIGURE I

Generalized refrigeration (rectal temperature 86° F.) maintained by exposure at room temperature of 60° F. after initial reduction of body temperature by ice-pack. Note petroleum jelly gauze to protect eyes; nasal tube for administration of fluids or sedatives.

PSYCHOPATHOLOGIC WAR REACTIONS

Recently Dr. F. G. von Stockert reported to the medical society of Frankfort on the Main observations made in the psychiatric ward of the military garrison of Frankfort of the first 100 patients received in the first two months of the war. He compared these observations with those made in peace times and in 1914. Fewer alcoholic cases were found than in 1914. In the first week of the war two suicides and three deaths from emotional instability, due to anxiety, occured. Similar psychopathic reactions have frequently been observed during the first few months when recruits were drafted for military training in peace times. Experiences shows that hysterical reactions do not begin to accumulate until after a war has been in progress for some weeks. These hysterias are largely monosymptomatic. In the treatment of these cases it is important to check its evolution; for example, not to allow mutism to become aphonia.

Berlin, April 12, 1940.
J.A.M.A.

Similarity – Dissimilarity

EUGEN KAHN, M.D.
New Haven, Connecticut

Dr. Kahn received his M. D. degree from the Faculty of Medicine of the University of Munich, Germany, in 1911. Since 1930, he has been Sterling Professor of Psychiatry and Mental Hygiene at the Yale University School of Medicine and Psychiatrist-in-Chief of the New Haven Hospital, New Haven, Connecticut. Previous to 1930, he was on the Staff of the University Clinic for Neurology and Psychiatry in Munich, and on the Faculty of Medicine of the University of Munich. Dr. Kahn is a member of the American Psychiatric Association and the Association for Research in Nervous and Mental Disease.

The facts of similarity and dissimilarity are so thoroughly part and parcel of human experiencing that one cannot "isolate" them for special observation. While trying to deal with them as detachedly as possible, we will slip quickly over into the experiential field —willy-nilly.

We may consider it a fact that things, phenomena, individuals, situations, cultures, societies have earmarks of similarity and dissimilarity; they may be similar to, or dissimilar from one another. There are shapes, sizes, colors, smells, tastes, movements and what not which we sense, perceive, discriminate and to which we respond intellectually and emotionally. All our conditioning, pattering, training, learning in which repetition plays such an outstanding role rest on similarities and dissimilarities as we perceive and are taught to perceive them. Repetition, particularly rhythmic repetition, e.g. of a movement, of a sound, appears to be pleasant to the infant; it implies similarity and is manifested in innumerable ways throughout the life of the individual and the group. Every kind of orientation is based on similarity—to be exact, on the differentiation of similarities and dissimilarities, e.g. language, mathematics, science. Facts and alleged facts of similarity and dissimilarity enable us to put up frames of reference—classifications as well as filing systems.

The more closely two things, phenomena, individuals, etc., resemble one another, the more difficult is it to distinguish them. Special training becomes necessary to develop expert ability, e.g. tobacco smellers, wine tasters.

Similarity, in a sense, conceptually includes dissimilarity, as the first notion implies that things, phenomena, individuals, etc., with all their resemblances are fundamentally unlike. One might say that similarity and dissimilarity differ as to degree only. There never exists perfect likeness or sameness or identity between two things, between two phenomena, between two individuals, etc. We will refrain from hair-splitting and deal squarely with similarity and dissimilarity realizing that both may be very subtle. Often enough one person or one group may recognize similarity where and when another person or another group would find dissimilarity; similarity and dissimilarity are not absolute, but relative.

Differentiation and discrimination are, of course, experiential performances. They are possible on the basis of our capability to compare. Comparison is, so to speak, the experiential backbone of all matters concerning similarity and dissimilarity. *What* we compare, the content of our comparisons, is essentially derived from our physical and social-cultural environment. *How* we compare, our attitude towards similarities and dissimilarities, is essentially determined by features and tendencies of our own personalities. The capability to compare can be trained within certain limits as determined by innate personality factors (sensory endowment, intelligence and others).

The recognition of similarities and dissimilarities is vital in the individual's orientation in his world, e.g. search for food, protection against enemies. This may seem to be more obvious in primitive societies, but it also holds true in sophisticated ones.

We continuously compare factors in our actual situation with one another and with factors in former situations, i.e. with past experiences. We often say, "this looks like . . .," "this reminds me of . . ." Our store of knowledge, our memory, our intelligence are instrumental, as regards the breadth, depth and relevance of our comparisons for ourselves and for others. Our emotional life plays a powerful part. Likes and dislikes, love and hatred are based on similarities and dissimilarities. We like or dislike things, persons, situations we had been experiencing pleasant-

ly or unpleasantly before. We are inclined to find similarities and dissimilarities according to our likes and dislikes. One can just as well say that we tend to be biased whenever we are emotional and, vice versa, whenever we are biased we are so on an emotional basis. For example, the statement: X is very dissimilar from Y may really mean: I want X to be dissimilar from Y because I like Y and dislike X. Emotions may make us "blind" for similarities and dissimilarities which we do not want to "see."

Comparing things, phenomena, individuals, situations, cultures, we discover similarities and dissimilarities. We are always searching for similarities and for dissimilarities, differences. The more similarities we discover, or believe we discover, the more familiar will things, phenomena, individuals, situations, etc., appear to us. Either the familiar is not dangerous at all, or we are somewhat prepared to handle it even if it implies danger. This signifies: similarity makes for familiarity—familiarity makes for security as it either prevents or alleviates fear. On the other side: dissimilarity evokes unfamiliarity —unfamiliarity harbors danger and makes for insecurity and fear. More specifically: similar surroundings appear familiar, comfortable, safe. Similarity and familiarity give confidence. On the other side: enemies are dissimilar, different from the clan, from one's own people; so are, in a measure, all "strangers" or "foreigners." Dissimilarity is apt to produce discomfort, tension, fear, distrust. The "New" is dissimilar from past experiences; it is unfamiliar, threatening; it is the unknown and uncomparable anticipated with tension. It must be *assimilated;* then it becomes familiar as it has ceased to be new. The "Old" is implicitly familiar; it reminds us of any number of past experiences upon which we continuously draw in our comparisons. In retrospect even an originally strange, threatening experience becomes familiar when it is reminisced, reexperienced. The very tinge of gruesomeness accompanying such an experience may contribute to its familiarity and may be sought in reminiscing and retelling it as a definitely pleasant sensation.

Without the sweet comfort of the similar and familiar, we may get confused, bewildered, disoriented, afraid. Although we crave similarity and familiarity and usually enjoy them, they are not always enjoyable; they may get stale, boring and annoying. We are lured and excited by the unknown which is dissimilar and unfamiliar; we are seeking it with a tickling, tensional sort of pleasure—anticipating the potential glory of our mastering and assimilating it. We always fall back on the familiar, however, as only on its background has the unfamiliar its color and promise. The lure of the unknown, of the dissimilar, is most outspoken in childhood and adolescence when by necessity innumerable new experiences must be collected, accumulated and assimilated. Youth is somewhat antagonistic toward the familiar and prepares to conquer new worlds. We are inclined to correlate adventurousness with youth and immaturity and to assume that the grown-up, allegedly mature, individual is satisfied in and with a familiar setting. We cannot help thinking of revolutionism and conservatism in this connection.

All remarks made so far are naturally applicable to our patients as well as to ourselves. To the psychiatrist his patients do not look unfamiliar; he sees similarities and dissimilarities among them which are not observed or appreciated by the layman.

The psychiatrist groups, classifies, types, diagnoses his patients according to his knowledge and training in or in relation to frames of reference as set up in the contemporary period of his field; i. e. he compares in his professional setting. There is always some argument between conservatism and revolutionism in our field as in other fields. Groping our way through similarities and dissimilarities we try to get some order into our professional experiences and to utilize them as regards prognosis and treatment no less than in respect to diagnosis.

We may not always be fully mindful of the fact that in these comparisons our own personalities and experiences are involved. This is important because of the emotional implications we have mentioned. If, say, the frame or the frames of reference of a patient are similar to his, the physician will not only better understand the patient, but probably also be in a more favorable position to help him. But the doctor may also be prejudiced in his diagnosis. The reverse may happen just as well; the patient's and the

psychiatrist's frames of reference may be miles apart; unfamiliarity may be predominant and a psychiatrist who is not well experienced and satisfactorily poised may badly misjudge the diagnostic and prognostic lay of the land.

When faced with a patient and a situation apparently entirely familiar to us, we should not forget that in all likelihood there are still between the patient and ourselves and between this patient and other patients very numerous dissimilarities which are to be considered and evaluated. Things, phenomena, individuals, etc., quite familiar to us, may have implications of unfamiliarity for the patient on grounds of his personality, his actual situation, his past experiences, none of which can ever be alike in two individuals. The very place of the interview may play a role; for instance, the doctor's office or the ward are familiar to the doctor, but new and strange to the patient, at least in the beginning of the patient-doctor-relationship. Clouding of consciousness, affective disturbance with feeling of guilt and expectation of punishment may precipitate or augment the strangeness, the unfamiliarity felt by the patient. Even in the very mildest personality disturbance there are a number of premises making for dissimilarity and unfamiliarity which the doctor does not experience as the patient does. The patient usually is either unable or unwilling at the beginning of personality study and therapy to accept our premises; hence we had better find out his—naturally not in order to accept them if they appear unacceptable, but in order to come to an appreciation of the patient's frame of reference, to an understanding of this suffering human being in his situation.

How far we can go in this understanding depends on a variety of factors in respect to ourselves, the patient's condition, and the situation: (1) We may be narrow as regards our own frame of reference or use a number of frames of reference according to our personal flexibility, training and experiences. We may be able and willing either to control our tendencies to interpret or to let them run wild. (2) The patient's condition may not permit anything more than registration of observations; he may be stuporous or aphasic, for example. (3) The situation in the patient's home, in the doctor's office, in the hospital may be forbidding of any intensive and extensive approach. If we are dealing with a small number of patients, we are in a better position to give them a thorough individual work-up. If we are crowded or rushed we may be forced to make snap-shot diagnoses and prescribe schematic treatments. When we have to take care of a multitude of patients, we tend to find all manner of similarities which may conceal dissimilarities. Things are usually more complicated if we get closer to them than they appear to be if we are dealing with them, as it were, from the bird's eye view. We, once in a while, cover up our feeling of unfamiliarity by means of a ready made label diagnosis; we can always say and often do say: "I have seen a case like this one" and thus give the patient's case the stamp of similarity with a previous experience of ours. We should not fool ourselves as regards such a procedure; it may give us the sweet comfort of familiarity, of classification, of diagnostic achievement, but ever so often it neither increases our psychiatric knowledge, nor the patient's chance for a more speedy recovery.

We must be permanently willing to doubt and to criticize the actual correctness of the conclusions we draw from our comparisons; we must be fully aware of the probability that there are still some similarities and dissimilarities left undiscovered or unsatisfactorily interpreted in respect to the patient's premises or frame of reference lest we get diagnostically, prognostically and therapeutically into that sort of rut attitude which presents such a terrific problem when we are faced with it in a patient.

Most fortunately, we are increasingly appreciating that our patients, whatever names may be given to their "diseases," are human beings developing uphill and downhill under conditions changing within and without. There is perhaps a certain danger of narrowing the concept of development by tying it up too closely with the concept of continuity. Continuity in this connection means that throughout the individual's development similarities are running like a thick red rope, being experienced by the patient, and observed by the psychiatrist. Such is obviously not the case. Continuity is ever so often broken in the patient's development, be it temporarily (delirious conditions, e.g.), be

it for the remainder of his life (certain schizophrenic patients). Everyday language has a few phrases for such occurrences; the person is "no longer himself," "he was not himself when this happened," or "when he did this," "he is not the man he was in former times," "he is a broken man." We often hear patients say that "everything looks strange" and see them act accordingly. Some patients make statements which directly express the change which they undergo and which they experience as some break in their individual continuity (certain experiences of depersonalization, of unreality feelings, etc.); they experience and in their ways tell us that they become unfamiliar to themselves, dissimilar to their former personalities. I daresay that we have so far not too much knowledge of and insight into such processes of dissimilation although, unless I am completely mistaken, they play a considerable role in not a few of our patients and, as I hasten to add, also, if in minor degrees, in the development of "normal" people.

We realize that X.Y. on the day of his birth is different from X.Y. on his tenth, twentieth, thirtieth, and so on, birthdays. Yet we seem to be fascinated by the similarities and take a straight or smoothly curved line of development for granted. We seem to forget or to take too lightly the developmental vagaries which are due to the individual's getting more and more dissimilar from himself and to his varying awareness of and attitude toward this dissimilation.

Some Spinal Fluid Criteria for Neuropsychiatric Diagnoses

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Dr. Skoog received his M. D. degree from Northwestern University Medical School in 1902. From 1904 to 1908, he was Physician and Pathologist for the Kansas State Hospital for Epileptics and the Woodcroft Hospital, Colorado. After this, three years were spent in neuropsychiatric research and study in Vienna, Paris, London and Madrid. Dr. Skoog then worked as an Instructor in the University of Kansas School of Medicine, becoming Professor and Head of the Department of Nervous and Mental Diseases, which position he held from 1915 to 1928. At present, Dr. Skoog is on the staffs of St. Luke's, Trinity, St. Mary's, Menorah, and Kansas City General Hospitals. He is a member of the American Psychiatric Association, the Central Neuropsychiatric Association, and the Association for Research in Mental and Nervous Disease. Numerous scientific articles have appeared under Dr. Skoog's name in French, German and American medical journals, covering especially the subjects of epilepsy, pernicious anemia, tumors of the central nervous system, poliomyelitis, encephalitis, amyotonia congenita, bromism, and cerebrospinal fluid.

Cerebrospinal fluid studies should be attractive to every medical man because of the great diagnostic possibilities in relation to so many diseases of the central nervous system, not to mention the possible academic interests. The therapeutic applications, also of much value, do not logically come under our title. Some argumentative reports in the literature certainly should invite further researches. Space here forbids anything but a brief outline of several of the more salient facts. However, a few introductory remarks relative to the physiology of the cerebrospinal fluid seem in order, so that we may have clearly before our minds the normal before attempting to judge abnormalities.

Medical men about the time of the early Christian era had opinions relative to the cerebrospinal fluid and choroid plexus. Herophilus, Galen, Vesalius, Willis and others had various theories relative to the physiology. Quincke in 1872 engaged in some interesting physiologic experiments and performed spinal punctures on some animals. However, it was not until 1891 that he performed lumbar punctures on patients for therapeutic purposes. At this time, he introduced his water manometer which is suggestive of the modified ones used today.

Physiologic

The past thirty years have witnessed a considerable amount of argument and experimentation relative to the source of the cerebrospinal fluid, its absorption and the possible quantities which may be produced in the human being. The vast majority of medical men now are convinced that the choroid plexus is the source of practically

all of the cerebrospinal fluid. Whether the choroid plexus is a true gland or not may be open to question. Most scientists hold to the belief that the fluid is a transudate rather than a secretion. No other acceptable function has ever been attributed to the picturesque plexus cells found in large clusters in the lateral, third and fourth ventricles. Dandy in his experimental work on dogs demonstrated that the formation of the fluid practically ceased when all of the choroid plexus was removed or destroyed. I have had an opportunity to study an unusually interesting case, clinically and at autopsy. Each time, repeated lumbar punctures demonstrated an extremely low pressure with only a few drops of spinal fluid obtainable. The autopsy, two months later, proved that nearly all of the choroid plexus cells had been destroyed by the syphilitic gummatous process in this organ. Possibly only a very small amount of the fluid can originate from the ependyma and perivascular spaces.

The next important problem is to know where and how to obtain the fluid for clinical purposes. There is only a slight difference in the quantitative chemistry for the fluid taken at different loci. The cerebrospinal fluid may be obtained by passing the needle through the orbital fissure, the ventricles and subarachnoidean cerebral spaces by trephining at various logical points, through a fontanel in babies under one year of age, cerebellar cisterna by way of foramen magnum, dorsal and lumbar spaces. Some of these are impractical. Trephining the skull at different points to obtain fluid from either anterior or posterior ventricular horns is a more formidable affair. Where the cranial ossification has not been completed, it is an easy matter to introduce a spinal puncture needle through the cerebral cortex into one anterior horn by way of the anterior fontanel, or a posterior horn through the posterior fontanel. The small amount of possible trauma to the brain is of no consequence. There is a remote possibility of traumatizing a small vessel which could cause some objectional bleeding.

I have, on a few unusual occasions, especially for tetanus where spinal column rigidities are marked, introduced a spinal puncture needle through some of the dorsal spaces and successfully removed the fluid.

Cisterna puncture which has been popularized by Ayers, is of diagnostic and therapeutic value in some cases. An imaginary line through the auditory canal and external canthus indicates the direction of the needle to be introduced into the cisterna, existing normally between the superior surface of the medulla and the inferior surface of the cerebellum. We first should aim to have the point of the needle strike the superior rim of the occipital bone after being introduced into the middle of the posterior scalp slightly below the external occipital protuberance. Then the direction of the needle is lowered slightly until it passes through the foramen magnum to touch the dura. We should be able always to feel when the dura is penetrated and stop there. This method invites a remote possibility of trauma to the medulla or vascular injury. Combined with a simultaneous lumbar puncture, this method may be of much value in the diagnosis of a compression of the spinal cord at any segmental level. Lipiodol also may be dropped into this cisterna preparatory to taking x-ray plates to aid in more exactly localizing a suspected cord compression.

In most cases, where cerebrospinal fluid is desired for diagnosis or for the introduction of some therapeutic substance into the subarachnoidean spaces, the more popular method of a third lumbar puncture is indicated. We may also select the second or third lumbar space. Above the second there may be danger of trauma to the lower portion of the spinal cord. In new born babies the tip of the spinal cord is about one vertebral segment lower than in the adult. We may use the reclining posture without a pillow and with the head and knees drawn markedly toward each other; or a sitting position with the head and shoulders bent sharply forward. Select a posture for the individual case.

Where you wish to introduce air into the subarachnoidean spaces for diagnostic purposes, the sitting posture is the one of choice. Many patients fear the pain of a spinal puncture, but they can be assured and usually placed in a tranquil mental state by the introduction of a small amount of local anesthetic into the skin at the puncture point to the depth of two or three centimeters. The needle may enter the skin anywhere from the exact midline to about one centimeter to left or right. After some considerable penetra-

tion the ligamentum subflavum offers greater resistance, and going about one centimeter further the dura is cut through with a mild grating sensation. After withdrawing the stylet, should no spinal fluid appear, rotate the needle 90 to even 360 degrees or reintroduce the stylet. A nerve root occasionally obstructing the flow of the fluid may be pushed aside by these methods. Infrequently, a motor or sensory root pricked by the point of the needle will produce a sudden motor contraction or lightning-like painful sensation in a small peripheral area corresponding to the irritated radix. Immediately apply the apparatus for measuring the pressure with the first appearance of fluid. A mercury manometer is the most convenient to use and carry about. The water manometer introduces a greater amount of accuracy for a few particular tests. For comparisons the water is to the mercury as 13.6 : 1. The French tambourine instrument is seldom used. A minimum of 5 to 10 cc. of fluid is required for the various tests. More than that may be removed for therapeutic spinal drainage in certain cases. Collect the fluid in two or three sterile tubes or bottles. The several containers are of particular value if there happens to be a small quantity of blood in the first tube. We should endeavor to obtain fluid free from blood, but this complication infrequently may happen, even with the best technique.

The annoying lumbar puncture headache following the procedure is somewhat of a nuisance to the patient. Occasionally, it may endure a few days to two weeks. The neurotic individual with normal spinal fluid in every respect is more likely to give rise to such a sequela. A slow removal of the fluid will lessen the chance of this headache. It always immediately disappears when the head is placed in a position as low or lower than the third lumbar area. It never occurs in cisterna punctures. Large doses of strychnine for a day or two following the operation may be indicated if there is much subsequent cephalalgia. It is usually better in the unknown patient to perform the puncture either in a hospital or at the residence where a minimum amount of subsequent movement is required during that same day.

Normal cerebrospinal fluid should be perfectly clear with a specific gravity of around 1,007. It may be slightly opalescent where the cell count is moderately increased. Xanthochromia occasionally may be encountered where there is a partial or complete blocking of the spinal canal, especially with a tumor. A few red blood corpuscles might cause a yellowish tinge to resemble the genuine xanthochromia. A certain amount of albumin is present in all specimens, but increased where the pleocytosis becomes markedly elevated. Globulin is either absent, or present in very small quantities. Large amounts may be found in neurosyphilis with parenchymatous degenerations. Sugar is present in all fluids ranging from 0.048 to 0.6 per cent. It may be increased mildly in encephalitis and considerably augmented in diabetes mellitus. A large decrease frequently is noted in acute infections involving the meninges.

The pressure of the spinal fluid at the third lumbar space varies considerably, depending upon many factors. In the reclining posture, Quincke gave normal readings varying from 40 to 150 millimeters, water gauge, as normal; that of 200 was considered definitely pathological. In a sitting posture with the trunk and head bent well forward I figure 90 to 150 as normal, 150 to 200 as possibly abnormal, and anything above 200 as decidedly pathological. It is usually increased with anything like an inflammatory process involving the brain and spinal cord or the leptomeninges. Cerebral trauma, with or without hemorrhages, and brain atrophies frequently will produce an increased pressure, as in late cerebrospinal syphilis. Intracranial tumors, internal hydrocephalus and tuberculous meningitis may produce extreme elevations, ranging from as high as 400 to 1000 millimeters. A sharp decrease in the spinal fluid pressure may be accounted for rarely by the destruction of the choroid plexus cells, but more often by some obstructing pathological process in the spinal canal.

The cytology of the cerebrospinal fluid is subject to a considerable amount of difference of opinion as reported in both text books and the periodical literature. There should be no erythrocytes. Normally, a few lymphocytes may be present. Some books give ten as the normal maximum number. Emphatically would I call this figure erroneous! I believe two or three small and large lymphocytes to be the upper limit. One or two cells may be

counted, and at times none. My deductions are based on spinal fluid studies where careful cell counts were made on a number of known cases of malingerers, hysterias and neuroses. It is admitted that occasionally some chemical, toxic substance, or possibly a meningismus, may account for a temporary rise in the cell count ranging from two to five.

In the various types of meningitis the respective bacterium may be found. A single search on one specimen of spinal fluid with no organisms reported may lead you into error. Further painstaking examinations are in order where clinical judgment so indicates. A successful search in tuberculous meningitis may be a good illustration.

Tumor cells may be found in not more than one or two per cent of all brain tumors. A certain amount of cellular debris or amorphus material, including several varieties of clear or slightly yellowish crystals, are found frequently in chronic cerebral or mental disorders, especially in epilepsy.

Clinical

Syphilis — In general medical practice, where spinal fluid diagnostic work may be required, cerebrospinal syphilis holds first place. These cases are numerous in the practice of all medical men and frequently much valuable information may be forthcoming. The cell count, particularly, often indicates the degree of involvement of the leptomeninges and the ventricular cavities. It may aid in differentiating early paresis, tabes, and simple cerebrospinal syphilis whether mostly parenchymatous or vascular. The goldsol test may be relegated to a technical laboratory. But the evaluation belongs to the practitioner of medicine. The most striking reaction occurs in paresis and it may be of great value in differentiating the early stages. The first four to six tubes usually become completely discolored. Frequently, only the last one or two tubes retain a somewhat normal purple. The maximum change in cerebrospinal syphilis occurs in the 1/40 to 1/80th dilutions. The same changes may be seen in tabes, but are somewhat milder. The meningitis curve is decidedly to the right. This holds for the tuberculous type also. Outside of paresis the curve is not so decidedly valuable in differentiating types of syphilis, but taken with other laboratory reports and clinical signs is of much diagnostic value. Disseminated sclerosis frequently gives a syphilitic curve, and quite often the paretic one. But the serum tests always should be negative.

Brain Trauma—Injuries to the brain and its meninges naturally present many varieties or group syndromes, depending upon the neural centers and pathways involved, and the degree and extent of destructions. Clinically, they may be divided into two groups, those having acute manifestations, and those of chronic nature, which may appear even several years later. Red blood corpuscles varying in quantity are found frequently immediately following the injury, or a few days later. As a rule, a moderately increased pressure may be noted. In the chronic stages, from a few months to several years later, increased pressures and quantity of fluid can be found. Usually this elevated pressure may be accounted for by an impaired resorption rather than increased production of fluid.

Neoplasms—Augumented pressure is the chief clinical change encountered in the cerebrospinal fluid for the various types of brain tumors. Here the unusually high pressures are also encountered in tuberculous meningitis and internal hydrocephalus. Figures ranging from 400 to 1000 are read commonly on the water manometer. Of course, internal hydrocephalus frequently is produced by an intracranial neoplasm.

Meningitis—The various types of acute meningitis may present moderately increased pressures, frequently ranging from 200 to 300 mm. Tuberculosis of the meninges often will furnish extremely high readings. Naturally, a thorough search for a specific organism should be the rule. One or more absesses of the brain, which may or may not be accompanied by meningitis, should show a moderately increased pressure.

Poliomyelitis and Encephalitis—Acute poliomyelitis and the various types of encephalitis will give a moderately increased pressure. A slight opalescence may be noted in many cases, probably depending upon the degree of pleocytosis. An increased lymphocyte count, ranging from 10 to 200, is the rule. A purely parenchymatous inflammatory process in either brain or spinal cord should produce little or no increase in the cell count. In other words, we feel that irritation and inflammation of the leptomeninges or epen-

dyma are responsible for stimulating a discharge of lymphocytes into the subarachnoid spaces and ventricles.

Hemorrhages—Hemorrhages in the brain, from whatever cause, will present colored cerebrospinal fluid to a degree depending upon the amount of blood poured into the subarachnoid spaces. Unless the hemorrhage breaks into ventricles or the subarachnoid spaces, no blood should be found at the spinal puncture. If we observe a yellowish or red first few drops of spinal fluid, the question immediately arises relative to whether this has been caused by injury from the needle to small blood vessels. If so, the color rather promptly clears. Therefore, we have a good reason here to collect the fluid in three tubes. Number one tube may show blood and two or three be clear.

Multiple Sclerosis — Disseminated sclerosis in many patients will present a few changes in the spinal fluid. A slight lymphocytosis, and a moderately increased pressure may be noted in many cases. Complement fixation tests should always be negative in uncomplicated ones. However, the goldsol test frequently is suggestive of paresis or cerebrospinal syphilis. This state may lead to errors for a differential diagnosis in the very earliest stages of the disease.

Epilepsy—Naturally the epilepsies will present mostly negative findings. However, frequently degenerated or cellular debris with crystals, clear and of a yellowish color, may be noted. The pressure can be found increased in a few types of the epilepsies. Where syphilis is an etiologic factor, and this occurs only in a small percentage, the usual late luetic findings in the spinal fluid may be anticipated.

Resume

The methods for obtaining the fluid are manifold; but the second, third and fourth lumbar spinal spaces offer readily accessible loci to obtain the fluid with a minimum of danger.

Taking pressure readings from time to time during the puncture frequently is quite important, and measurements may be made by either a water or mercury manometer.

The microscopic examination should not be neglected. Search may be made for bacteria, erythrocytes, lymphocytes, tissue cells and debris. The lymphocyte count should not exceed two or three and frequently is found to be one or less.

A careful examination of the spinal fluid may be all important in reaching a decision relative to the type of meningitis which might exist.

While cerebrospinal fluid is an important avenue of diagnostic approach to many diseases of the central nervous system, yet one or many tests on the liquor may be stressed as having great value especially in meningitis, neural, spinal and cerebral syphilis, and brain trauma.

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Book Review

THE LIFE AND DEATH INSTINCTS, by Arthur N. Foxe, M.D., The Monograph Editions, New York City, pp. 64, Price $2.00.

This is an extremely theoretical and philosophical book which is the result of observations of many criminals at the Great Meadow Prison where the author served as a psychitrist.

In this monograph the author takes issue with Freud by emphasizing the fact that the instinct of self-preservation in our present civilization is just as important as the sex instinct. The author calls this instinct euphonically "Vita". Vita is opposed by a more conservative instinct which tends to control the exuberance of Vita. This is obviously the death instinct, or Fatum, as the author calls it.

In the general discussion of the interplay of these three instincts the author comes to some other startling conclusions which are hard to follow. He states that unrestrained life brings about death and to perish is more vital than to die. (!?) On the basis of these three instincts the author explains the various psychological phenomena of our daily life.

In conclusion he makes interesting remarks about crime and criminals. For some peculiar reason he calls criminals criminotics and crime, criminoses. Most crime can be explained on the basis of an early trauma to the life of the child, some sort of an unsatisfied need of some sort at home, and the involvement of some member of the family in crime.

The book is highly speculative but it makes interesting reading.

J. KASANIN, M.D.,
San Francisco, California.

Newsnotes

ADDRESSES

At the Annual Meeting of the Missouri-Kansas Neuropsychiatric Association, held at Kansas City, Missouri, Dr. Walter Freeman, Washington, D. C., Associate Editor of *Diseases of the Nervous System,* spoke on *The Wincing Reaction;* and Dr. George T. Harding, Columbus, Ohio, Associate Editor of *Diseases of the Nervous System,* spoke on *The Treatment of Psychiatric Patients in the Private Hospital.*

Dr. Louis J. Karnosh, Cleveland, Ohio, Associate Editor of *Diseases of the Nervous System,* was guest speaker at the April 19th meeting of the Ohio County Medical Society Meeting, Wheeling, West Virginia. His subject was *Tumors of the Neck.*

On June 12, 1940, at New York City, in the Section on Nervous and Mental Diseases, of the American Medical Association's meeting, Dr. Hans H. Reese, Madison, Wisconsin, Associate Editor of *Diseases of the Nervous System,* in collaboration with Dr. W. F. Peterson, Chicago, Illinois, presented a paper entitled, *Psychotic and Somatic Interrelations.*

The Texas Neurological Society held its twelfth annual meeting at Dallas on May 12, 1940. Among those on the program was Dr. Titus H. Harris, Galveston, Texas, Editor, *Diseases of the Nervous System,* who read a paper in collaboration with Drs. H. L. Towler and Hamilton Ford, on encephalography.

The Minnesota Society of Neurology and Psychiatry attended a scientific program in Rochester, Minnesota on May 11, 1940. The guest speaker of the meeting was Dr. Peter Bassoe, Chicago, Illinois, Associate Editor, *Diseases of the Nervous System,* who spoke on *Some Neuropsychiatric Observations in Mexico, Puerto-Rico and the Virgin Islands.*

FIRST ANNUAL MEETING

The first annual meeting of the Minnesota Mental Hygiene Society was held on May 8, 1940 at Minneapolis. Dr. David Slight of the University of Chicago, was the principal speaker.

Abstracts

Transactions of the Massachusetts Society for Research in Psychiatry*

EFFECT OF FATIGUE UPON THE PLANTAR REFLEX IN NORMAL AND IN MENTALLY DEFECTIVE INDIVIDUALS

Paul I. Yakovlev, M.D., and Malcolm J. Farrell, M.D.

The behaviour of the plantar reflex can, under certain conditions, be considered as an indicator of the "cerebral cortical endurance" to fatigue. A sufficient degree of fatigue may bring about the Babinski sign in persons otherwise normal. It may reveal a latent deficiency of the corticospinal system in persons with a congenital or acquired impairment of cerebral functions otherwise not evident. The occurrence of the Babinski sign in the mentally defective after a routine day's work is significantly frequent and characteristic. The authors studied the plantar extensor response in 168 college students before and after exhaustive exercise in a military training camp. In over seven per cent of these physically and mentally normal young individuals a unilateral (6%) or a bilateral (1%) Babinski sign developed at the end of the day. The study of the plantar reflex in a group of 229 adult imbecile males whose average age was 33 years, showed that at the end of a day of routine farm work to which this group of individuals was quite "accustomed" over 21 per cent had developed either a tendency to extensor response (5%) or a frank unilateral extensor response (10%) or a bilateral extensor response (6%). Various aspects of the effect of fatigue on the plantar reflex and its physiologic and clinical implications are discussed.

* Meeting of May 2, 1940, at the Metropolitan State Hospital, Waltham, Mass.

STUDIES IN VITAMIN PHYSIOLOGY

I. VITAMIN C

Rupert A. Chittick, M.D., Elmer Stotz, Ph.D. and Kenneth J. Tillotson, M.D., McLean Hospital, Waverley, Mass.

This is a preliminary report of a study to determine the rate of appearance of ascorbic acid in the blood following the ingestion of a measured amount. The normal curve was established with ten young healthy adults. No apparent abnormality has been found so far in schizophrenic patients. Four elderly patients (75-87 years) all showed a characteristic abnormal curve. A correlation between a low basal ascorbic acid blood level and low urinary excretion during the experimental period seems to be established. Suggestions for further study of the nature of ascorbic acid absorption are made and will be investigated further.

Newsnotes

CONFERENCE HELD ON MENTAL HYGIENE

The Western Massachusetts Conference on Mental Hygiene in Education and Social Work was held in Springfield, Massachusetts, April 12-13, 1940. One session was devoted to education and one to social work. The speakers were D. Frederick H. Allen, Philadelphia, Pennsylvania; and Dr. Ira S. Wile, New York City.

AMERICAN NEUROLOGICAL ASSOCIATION MEETING

The Sixty-Sixth Annual Meeting of the American Neurological Association was held at Rye, New York, June 6-8, 1940. Dr. Foster Kennedy of New York presided.

NEW YORK NEUROLOGICAL MEETING

The New York Neurological Society met with the Section on Neurology and Psychiatry of the New York Academy of Medicine on May 7, 1940, in New York City.

NORTH CAROLINA NEUROPSYCHIATRIC SOCIETY MEETING

The North Carolina Neuropsychiatric Society met recently at Charlotte, North Carolina and elected Dr. Mark A. Griffin of Asheville, North Carolina, President.

NEW ENGLAND SOCIETY MEETING

Dr. Roy D. Halloran of Waltham, Massachusetts, was elected president of the New England Society of Psychiatry at its annual meeting, held April 25, 1940 at Hathorne.

APPOINTMENTS

The Kansas State Board of Social Welfare announces that Dr. Thomas L. Foster has been appointed superintendent of the Osawatomie State Hospital. The appointment went into effect on June 1, 1940. The former superintendent, Dr. Ralph Fellows, resigned in order to take over the superintendentship of the Milwaukee County Hospital for Mental Diseases, in Milwaukee, Wisconsin.

Dr. Percy G. Hamlin, for the past few years a member of the Staff of the State Hospital at Cambridge, Maryland, has been elected Clinical Director of the Eastern State Hospital at Williamsburg, Virginia.

ELECTION TO OFFICE

During the recent meeting of the American Psychiatric Association in Cincinnati the National Association of Private Psychiatric Hospitals held its annual meeting. Dr. Mabel D. Ordway, of Glenside Hospital, Jamaica Plain, Boston, Massachusetts, was re-elected Secretary-Treasurer, and Dr. J. K. Hall, of Richmond, Virginia, was elected President. The Association will next meet in Richmond during the meeting of the American Psychiatric Association in May, 1941.

ROCKEFELLER GRANT

The Rockefeller Foundation has given a five year grant for teaching and research in neurology to Tufts College Medical School in Massachusetts. Dr. Kurt Goldstein, Clinical Professor of Neurology at the Columbia College of Physicians and Surgeons, will hold the same position at Tufts under the grant.

ORTHOPSYCHIATRISTS MEET IN BOSTON

The American Orthopsychiatric Association held its Seventeenth Annual Convention in Boston, Mass., on February 22-24, with Dr. Samuel W. Hartwell, Director of the Buffalo Child Guidance Laboratory and Professor of Psychiatry at the University of Buffalo, in the chair, and nearly a thousand members and guests in attendance. It was the first time the group had met in Boston, home of Dr. William Healy, pioneer in the study and treatment of the individual delinquent and first president of the association.

Professional workers from many fields reported the results of their researches on a wide range of adult and juvenile behavior problems. In a pre-convention announcement, President Hartwell said that the program had been shaped to the requirements and exigencies of contemporary life, centering around the task of "taking stock of what we know about helping people attain or retain mental health, in its personal and social applications." The emphasis, he said, was on the practical value of scientific findings in the study of human behavior and human relations, to parents and teachers, probation officers, clergymen, welfare workers, and others who deal with people in trouble.

The meeting struck a new note in the special attention it gave to the broader social issues of the day, as evidenced by the symposium on "Democracy and the Scientific Spirit," which featured the opening session, followed by a section meeting devoted to "Democracy and Mental Hygiene." Participants in these sessions were Professor William E. Hocking, of Harvard University; Professor Max Lerner, of Williams College; President Frank Kingdon, of the University of Newark, N. J.; Dr. Robert Waelder, of the Boston Psychoanalytic Institute; Dr. Everett S. Rademacher, of Yale University; and Dr. Harmon S. Ephron, of New York.

At the business meeting of the association, the following officers were elected for 1940-41; *President,* Dr. Paul L. Schroeder, Director, Institute for Juvenile Research, Chicago; *Vice-President,* Helen Leland Witmer, Director of Research, Smith College School of Social Work; *Secretary,* Dr. Norvelle C. LaMar, Associate in Psychiatry, New York Hospital—

Cornell Medical College; and *Treasurer*, Dr. Milton E. Kirkpatrick, Director, Division of Community Clinics, The National Committee for Mental Hygiene, New York.

Mental Hygiene.

GEORGIA STREAMLINING HER PROVISIONS FOR THE MENTALLY ILL

Georgia is tackling its state-hospital problem in earnest. After a survey of the century-old Milledgeville State Hospital, made early in 1938 by the Mental Hospital Survey Committee at the invitation of the governor, which revealed the utter inadequacy of existing provisions for the state's mentally ill, government officials lost no time in carrying the recommendations into effect. Governor Rivers and his advisers at once embarked on plans for a legislative and financial program designed to come to grips with the problem in a big way and lift the whole system of care and treatment to a new high level.

In January, 1939, the legislature created the State Hospital Authority, which took over and completed the plans for an extensive building program already in the making some months before. The financing was arranged through the issuance of $2,250,000 worth of state revenue bonds purchased by the Federal Reconstruction Finance Corporation, supplemented by a grant of $2,000,000 by the Public Works Administration, which enabled the authority to begin construction operations without delay. As a result, a new institution, embodying the most modern structural and functional requirements of an up-to-date mental hospital, is rising on a 132-acre site adjoining the old hospital.

The project, which will provide beds for 2,800 additional patients, is being rushed to completion for occupancy this coming summer. It is an impressive achievement, vividly pictured in a handsome illustrated brochure issued by the State Hospital Authority to acquaint the people of Georgia with the importance and significance of the enterprise. Describing the construction program as "a race with disaster," the report reflects a determination to remedy the present conditions as rapidly as possible and to bring to the mentally ill the best in humanitarian and scientific care and treatment that the state can afford.

Mental Hygiene.

COMPTON SANITARIUM
AND
LAS CAMPANAS HOSPITAL
COMPTON, CALIFORNIA
(Near Los Angeles)

Compton Sanitarium is a private psychiatric hospital with 120 beds. Emphasis is given psychotherapy by a staff of resident psychiatrists. Other treatment procedures are duly evaluated and administered. Careful records are maintained. There are psychiatrically trained graduate nurses; student nurses through affiliation; nursing attendants; dietitian; occupational therapist; recreational therapist; hydrotherapist; masseuse. Las Campanas Hospital (30 beds) provides adjunct general hospital facilities. Compton Sanitarium and Las Campanas Hospital are approved by the American College of Surgeons.

GLENN MYERS, M.D.,
Medical Director.

HERE'S WHAT THEY SAY!!

A Few of the Unsolicited Comments from General Practitioners on Our First Issues

"This is the first journal on neurology which I could read and understand."

"I enjoyed reading the first issue very much and might say that if the magazine continues to present papers in such a readable and understanding manner as shown in the first issue, it will most certainly be a success. Most articles written on neurological subjects are too highbrow for the average practitioner like myself, but I notice that all the articles in this issue were very well written in plain language."

"It would seem that throughout the country the specialty of neurology is coming into its own as indicated by this new journal in the field."

"I have read the new journal from cover to cover and feel that it is filling a long-felt need in our profession. I have often wondered why psychiatric literature had to be presented so abstractly that only the intellectually elite could understand it."

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